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08/709,965

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
08/709,965	09/09/96	GREEN	P 000287-00483

020350 26N2/1014  
TOWNSEND AND TOWNSEND AND CREW  
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EXAMINER  
LEE, R

ART UNIT	PAPER NUMBER
2615	

DATE MAILED:

10/14/97

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

# Office Action Summary

Application No.  
**08/709,965**

Applicant(s)  
**Green**

Examiner  
**Richard Lee**

Group Art Unit  
**2615**



☒ Responsive to communication(s) filed on 12/13/96 and 8/4/97

☐ This action is **FINAL**.

☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire 3 month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

## Disposition of Claims

☒ Claim(s) 26-46 is/are pending in the application.

Of the above, claim(s) \_\_\_\_\_ is/are withdrawn from consideration.

☐ Claim(s) \_\_\_\_\_ is/are allowed.

☒ Claim(s) 26-46 is/are rejected.

☐ Claim(s) \_\_\_\_\_ is/are objected to.

☐ Claims \_\_\_\_\_ are subject to restriction or election requirement.

## Application Papers

☒ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☐ The drawing(s) filed on \_\_\_\_\_ is/are objected to by the Examiner.

☐ The proposed drawing correction, filed on \_\_\_\_\_ is ☐ approved ☐ disapproved.

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. § 119

☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☐ All ☐ Some\* ☐ None of the CERTIFIED copies of the priority documents have been  
☐ received.

☐ received in Application No. (Series Code/Serial Number) \_\_\_\_\_.

☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\*Certified copies not received: \_\_\_\_\_

☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

## Attachment(s)

☐ Notice of References Cited, PTO-892

☒ Information Disclosure Statement(s), PTO-1449, Paper No(s). 2 and 7

☐ Interview Summary, PTO-413

☒ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Notice of Informal Patent Application, PTO-152

--- SEE OFFICE ACTION ON THE FOLLOWING PAGES ---

1. This application has been filed with informal drawings which are acceptable for examination purposes only. Formal drawings will be required when the application is allowed.

2. Claims 26-46 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

For examples:

(1) claim 26, line 3, line 21, claim 27, line 3, claim 28, line 4, claim 29, lines 3-4, claim 30, lines 3-4, claim 32, line 2, claim 33, line 5, claim 40, line 3, the phrase "adapted to" is vague and indefinite and should be avoided, respectively;

(2) claim 26, line 30, before "forearm", "the" should be properly inserted in order to provide proper antecedent basis for the same as specified at line 6;

(3) claim 31, line 2, before "end effector", "the" should be properly inserted in order to provide proper antecedent basis for the same as specified at claim 26, line 7;

(4) claim 33, line 28, line 33, line 37, claim 34, lines 5-6, claim 35, line 3, line 8, claim 36, lines 6-7, claim 37, lines 6-7, "a servomechanism" should be changed to "the servomechanism" in order to provide proper antecedent basis for the same as specified at claim 33, line 26, respectively;

(5) claim 34, line 2, claim 35, line 2, claim 36, line 2, claim 37, line 2, claim 38, line 2, "a surgical manipulator"

shows no clear antecedent basis, respectively. In addition, "the step of providing a surgical manipulator" shows no clear antecedent basis, respectively;

(6) claim 40, lines 29-31, the phrase "for pivoting the wrist relative to the so as to control the angle between the forearm axis and the wrist axis" as claim is vague and indefinite;

(7) claim 41, line 1, claim 42, line 1, claim 43, line 1, claim 44, line 1, claim 45, line 1, claim 46, line 1, "The surgical manipulator" shows no clear antecedent basis, respectively; and

(8) claim 46, line 4, "the surgical manipulator" shows no clear antecedent basis.

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

4. Claims 33-46 are rejected under 35 U.S.C. 102(a) as being anticipated by Alexander III of record (Impacts of Telemation on Modern Society).

Alexander III discloses a teleoperator system and subsystem as shown in Figure 1 and the same surgical method for endoscopic surgery and endoscopic surgical instrument (see detail slave manipulator unit of Figure 1) as claimed in claims 33-46

comprising an insertion section and a control section wherein the insertion section is adapted to be inserted into a patient through a small incision to a location adjacent a worksite in the patient; the insertion section comprises a forearm link, a wrist link and an end effector (see slave manipulator unit of Figure 1) wherein the forearm link has a proximal end, a distal end and a forearm axis extending longitudinally from the proximal end of the forearm to the distal end of the forearm; the wrist link has a proximal end and a distal end and a wrist axis extending from the proximal end of the forearm to the distal end of the forearm; the proximal end of the forearm link is connected to the control section (see servo actuators of Figure 1), the distal end of the forearm link is connected to a pivotal wrist joint; the proximal end of the wrist link is connected to the pivotal wrist joint and the distal end of the wrist joint is connected to the end effector; the control section comprises means for inserting and retracting the forearm link along the forearm axis and through the small incision, means for pivoting the forearm link about a first pivotal axis and a second pivotal axis which are perpendicular to each other and intersect the forearm axis at a pivot point adjacent the small incision, means for pivoting the wrist link (see Figure 1); operating a servomechanism (i.e., servo actuators) to rotate the forearm axis through the small incision, to pivot the forearm link about a first pivotal axis and a second pivotal axis which are perpendicular to each other

and intersect the forearm axis at a pivot point adjacent the small incision, to pivot the wrist link relative to the forearm, and to retract the forearm link along the forearm axis through the small incision; manipulating human tissue (see Figure 1) with the end effector at the worksite inside the patient; the wrist link comprises an inner link and an outer link (see detail slave manipulator unit of Figure 1) and wherein the control section further comprises means for moving the outer link of the wrist link relative to the inner link of the wrist link; the outer link of the wrist link and the inner link of the wrist link are axially aligned and wherein the control section further comprises means for rotating the outer link relative to the inner link (see detail slave manipulator unit of Figure 1); the end effector comprises a first element and a second element and wherein the control section further comprises means for moving the first element relative to the second element (see detail slave manipulator unit of Figure 1); the end effector comprises a surgical instrument head selected from the group of retractors, electrosurgical cutters, electrosurgical coagulators, forceps, needle holders, scissors, blades and irrigators (i.e., electrosurgical cutters as shown in detail slave manipulator unit of Figure 1); and the control section further comprises means for mounting the control section on a support rail of a surgical table for supporting the surgical manipulator during a surgical

procedure (see operating table where the control section is being supported in Figure 1).

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 26-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Alexander III as applied to claims 33-46 in the above paragraph (4), and further in view of Jau of record ("Anthropomorphic Remote Manipulator" by NASA Tech Briefs).

Alexander III discloses substantially the same surgical method for endoscopic surgery and endoscopic surgical instrument as above, but does not particularly disclose, though the control section comprising a plurality of control motor and linkages adapted to operate the insertion section with at least five degrees of freedom and the control section being adapted to operate the insertion section with at least six degrees of freedom as claimed in claims 26 and 27. However, Jau discloses a telerobot system similar to the arms, hands and fingers of a human as shown in the figure and teaches the conventional movement capabilities of the robot arm having 7 degrees of freedom and both robot hands having 16 degrees of freedom (see last column). Therefore, it would have been obvious to one of

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ordinary skill in the art, having the Alexander III and Jau references in front of him/her and the general knowledge of the movement of manipulator arms for teleoperator systems, would have had no difficulty in providing the control section as shown in the detail slave manipulator unit of Figure 1 of Alexander III the capability of operating the insertion section with at least five and six degrees of freedom in view of the teachings of Jau involving the various degrees of freedom of movement for the robot arms and hands for the same well known purposes as claimed.

7. **Any response to this action should be mailed to:**

Commissioner of Patents and Trademarks  
Washington, D.C. 20231

**or faxed to:**

(703) 308-9051, (for formal communications  
intended for entry)

**Or:**

(703) 305-5399, (for informal or draft  
communications, please label "PROPOSED" or  
"DRAFT")




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Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington. VA., Sixth Floor (Receptionist).

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Richard Lee whose telephone number is (703) 308-6612.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 305-3900.

  
RICHARD LEE  
PRIMARY EXAMINER

Richard Lee/rl

10/10/97

